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ABSTRACT

This document contains three conference papers concerning institutional research at the community college level. Ann Bromley discusses the practical implications of institutional research. The president, administrative staff, and faculty must be involved in identification of research issues, formulation of design, and application of findings. Research can provide data for decision making, can link administration and faculty more closely, and can help in implementing institutional goals. Gary A. Rice discusses the need for information systems in two-year colleges, so that decision making can shift from crisis-reactive to anticipatory-planning modes. A management information system model, a cost accounting analysis system model, and a curriculum accountability matrix model are presented in brief as potential means for synthesizing and analyzing data; William D. Cohen discusses the factors causing need for institutional research, objectives and subjects of institutional research at the community college level, and the organization of institutional research offices. Institutional researchers must not be satisfied with present levels of attainment, but must extend their competencies in information technology and their familiarity with higher educational administration. Bibliographies for each paper are included. (JDS)

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PROCEEDINGS:

CONFERENCE ON INSTITUTIONAL PLANNING IN COMMUNITY COLLEGES

April 29 and 30, 1976

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Center for Development of Community College Education

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PREFACE

The three papers contained in this issue of the Occasional Papers were presented at the Second Conference on Institutional Planning in Community Colleges. Dr. Ann Bromley, Dean for Records and Admissions at Santa Fe Community College, Gainesville, Florida, details the types of research conducted and the results and outputs of that research. Dr. Gary Rice, of Yakima Valley College, Yakima, Washington, discusses the development and uses of a comprehensive information system at a community college; and Mr. William Cohen of the University of Washington chronicles the evolution of the IR function and examines the possibilities for the community college.

Another activity of the Conference involved a simulation exercise constructed by Dr. John Chase, Director of the Office of Analytic Studies, Simon Fraser University, and Dr. William Tetlow of the University of British Columbia. The exercises are based on actual institutional research cases and were developed for the Association for Institutional Research. The simulation participant confronts the types of decisions and data that institutional planners and researchers in higher education face on a day-to-day basis. Those who are interested in examining this simulation may contact Dr. Chase at the following address:

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COMMUNITY COLLEGE RESEARCH AND SOME PRACTICAL IMPLICATIONS ON A CAMPUS

Dr. Ann Bromley*

Research in the community/junior colleges began only recently as a formalized activity. Periodic surveys have been conducted on the degree and role of institutional research. A brief review of some of these surveys furnishes us some objective evidence as to the trend in this area. In 1961, B. Lamar Johnson (1962) surveyed the western junior colleges and received responses from 100. He found that only two had a full-time coordinator responsible for research. Approximately 27 percent had a part-time coordinator who assumed this responsibility as part of his workload.

Swanson (1965) undertook a nationwide study four years later. He selected his sample from the members listed in the directory of the American Association of Junior Colleges. His findings showed that 19 percent of the junior colleges in the nation had some type of formal research organization, with five having a full-time staff member responsible for research.

Roueche and Boggs (1968) conducted a telephone survey in 1968 to determine junior college involvement with a commitment "to programs of institutional research." Seventy institutions responded. Approximately 23 percent had personnel employed to coordinate this activity. Seven years ago Van Istendal (1969), who had undertaken a similar survey, reported that approximately one-third of the junior colleges sampled in his study had a formalized research program and either a full-time or part-time staff member responsible for this activity. The trend is clear if these percentages reflect the increasing commitment of community/junior collges to the role of research as an integral part of their

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programs and services.

What are the day by day implications of research on a community college campus? What are its practical values? What are the benefits? Before we can address ourselves to these questions, there are two prime criteria which must be presented.

1. A commitment by the community college president and the key administrators as to the need for and the value of research on their campus is essential. It is unlikely that research, if conducted without presidential support or knowledge, will change existing practices. If the community college president abdicates his responsibility to make his educational decisions as he finds the answers to the questions in his college, little institutional research is likely to occur, to have meaning, or to be a catalyst for change.

2. The president, the administrative staff, and the faculty must be willing to identify the right research questions for their college. They must be willing to invest time, energy, and staff in attempting to find the right answers. Beyond finding the answers they must be willing to respond to the next challenge which is to use the data and to act on it. The commitment to incorporate findings in practice is necessary and it should be a prior commitment which has been made before designing the study.

One of the concerns that immediately faces an institutional researcher on a community college campus is the problem of developing priorities for institutional research activities. There are usually over a dozen potentially valuable research projects, but frequently coupled with that are the constraints of limited time and resources which prohibit all from being conducted. And again, this is where the president of the com-

munity college, the administrative staff, and faculty can assist the researcher in identifying the more immediate questions that concern the college in order that he and others can seek out the answers to those questions. Frequently this role of priority setting is one of the primary functions of a Research Advisory Committee, composed of administrators, faculty and, sometimes, students. It is my firm belief that the development of research priorities should be tied directly to the educational objectives of the college and weighed in view of the immediate and long-range goals.

Let me arbitrarily divide research activities into two broad basic categories: first, institutional research which is characterized by descriptive information about the college and about the students; second, evaluative research which is characterized by studies on the assessment of different learning systems and their relationships to measurable student performance. Within each of these categories of research the researcher and others would use course data, facilities data, financial data, staff data, and student data depending on the purpose of the research activity.

Institutional research is generally the easier of the two types of research to conduct. Institutional research is the complete collection of activities that provide information about the college, its students, and its faculties to those who can use it and need it. It is, of course, under this category that we cluster state reports, the HEGIS requirements, the Civil Rights Compliance Reports, and other types of reports which are requested and required by third parties. It may interest you to know that the HEGIS report which is due next fall will contain some of the data that had previously been contained in the Civil Rights Compliance Reports, and by this merger and consolidation the HEGIS report changes in part from a

voluntary to a compulsory type of report. (The National Center for Education Statistics which is one of the main government centers for the collection of educational data is extremely cognizant of the number of reports that are required of the colleges throughout the country and NCES is equally cognizant about the difficulties the colleges are having with the imposed definitions. As a member of the Advisory Council to the National Center for Education Statistics and as a supplier as well as a use of these data, I have supported the need for consolidation of reports and the need for universally applied definitions. This exchange needs to take place through communication among the suppliers of data, the users of data and the National Center for Education Statistics.)

Numbers related to financial resources, expenditures, physical facilities, student populations, staff data, etc., should be collected and kept in a format which can be changed as these data change and should be kept in more than one college office. I am sure that you have been frustrated as I have, that without the centralization of data and a continual and comprehensive updating of the information concerning the community college, we know selective data without a complete comprehension of the whole. These data are generally public information and should be shared on a comprehensive fashion and on a broader than one-office base. I advocate that each administrator at the college should have a copy of comprehensive profile of these data and certainly a copy should be available at the college library as a universal resource.

Another type of institutional research describes student body performance and activities, and reports are issued under a topic such as grade distributions in the various disciplines for Term 3, 1976. This type of report should be considered as one of the on-going institutional research reports. These reports lend themselves to comparative data,

and analysis can be made. Heads of departments and program directors are among those who find these data and comparisons involuable. Another report might simply be a listing of the characteristics, degrees, etc., of the graduates of the college for over a year. If these data are maintained routinely on an extended time frame, it is worthwhile to know to which institutions these graduates transferred to complete their college education. Singly and collectively these types of reports are administratively useful.

Let me illustrate how a series of interrelated studies might provide data which would be helpful in answering the question, "How can we increase our enrollment at our community college?" Among the types of studies which relate to this question are:

1. A study describing the characteristics of the current student body and relating these data to the census information about the community college's district or service area. This would easily identify those students that possibly the college is not reaching or attempting to reach.

2. A second study which also related to the overall question is "What is the attrition rate of our student body and what might we do to modify our programs or increase our student services to retain our students for a longer period of time?" Who is not returning and why?

3. A third study could be conducted on "What are the characteristics of those students who apply but do not matriculate?" Would it be helpful to know whether they applied and enrolled elsewhere or whether they applied and the registration procedures, the lack of appropriate course offerings, inadequate financial aid, or some other aspect of college and personnel procedures caused the students to change their minds about attending?

These three types of research studies would address themselves to the question of enrollment and should provide the necessary data leading to positive action which would result in desired increase.

Evaluative research tries to assess the relative effectiveness of different instructional techniques. Three of the necessary ingredients which must be present for successful evaluative research are: first, a willingness and desire on the part of the faculty member or program director to conduct this type of study and to be willing to modify behavior based on the results of the study. Second, a willingness and encouragement on the part of the administration of the college to have this kind of activity conducted on the campus and to support it. This usually demands a great deal more time on the part of the faculty member and the students within a particular program or a particular class. Third, a willingness on the part of the instructor and program director to work closely with the institutional researcher so that the project can be conducted in an objective and valid manner.

Because evaluative research is much more subjective than institutional research, the institutional climate for conducting evaluative studies must be supportive, sympathetic, and encouraging. This support and encouragement must permeate the institution and be a commitment from the president, the administrative staff and the other support services within the college. Nothing can dampen the ardor of conducting evaluative research more than for the results and the activities to be "put down" by colleagues or administration after the faculty member has ventured forth to conduct this type of research. It not only dampens the ardor of that particular instructor in conducting further evaluative research efforts, but it also serves as a warning to other who might be toying with the idea of pursuing the question "Is there a better way to

teach what I am teaching or is there really a better technique?"

Faculty are somewhat reluctant to become involved in evaluative research for many reasons. Among them are: it may be an additional burden without release time or administrative support; they are apprehensive that it will involve complex statistics and analysis; it may not prove the hypothesis; or they are concerned about the reaction of their colleagues.

An illustration from my own institution might be cited. One of the faculty in consultation with the director of institutional research decided to conduct a study as to why the students who took the initial course in mathematics were having difficulty passing the next course in the sequence. It should be noted that the initial course at the college was the only course which was required in mathematics for graduation in the general education package. It was found that even though the initial course was meeting the needs of the majority of students, it did not seem to be meeting the needs of those students who wished to continue on in mathematics to higher levels through college algebra, trigonometry, and calculus. As a result of this research inquiry and the development of these data, the mathematics area decided to develop a new course which would serve as the transition course between the first offering and the next in the sequence. The institutional researcher served as a catalyst for change.

The ERIC Clearinghouse for Community Colleges developed a Topical Paper designed to stimulate research in the community college. It presents a model for instructors, administrators, and researchers who wish to study the effect of their efforts. It begins: "A community college English instructor thinks his more mature evening students are performing better than his day students. A philosophy professor feels that reprimand-

ing students about performance on an examination does more harm than good. A political science instructor calls on the library staff to help her increase student use of current history materials...What do all these teachers have in common? All are interested in student learning and all are on the verge of formulating explanations that can be tested for accuracy." (Connor, 1969) This readable paper, "Is It Really a Better Technique?", may serve as a basic research primer for community college faculty and staff who are somewhat unsophisticated in research techniques and research design. It furnishes them with a simple way to discover if their suppositions are correct.

Let me enumerate some of the practical implications, as I see them, for research on a community college campus. Some are explicit; others are implicit, but may in turn have a more profound effect upon the character and direction of a community college.

1. The president and the administration will have appropriate data to make decisions and the administrators will play a major role in the identification of the questions they wish answered.

2. Comprehensive updated numerical data will be available concerning the college, its student population, its faculty, its facilities, etc. These data supply information which frequently is not readily available, but which is of interest to the faculty, the administration, the students, and the community. It should be considered a permanent reference book for the college and a copy certainly should be available in the library. Studies involving student body performance and activities should be conducted periodically and the information disseminated to appropriate faculty and staff. The type of study I have in mind is similar to the grade distribution study for the various disciplines. These data should be evaluated individually and comparatively by the faculty and staff in the

various areas. The entire research effort and the implications that it may have for the college can serve as avenues for change.

3. A creative and resourceful institutional researcher establishes an open and comfortable line of communication between the faculty, the staff, and his office. Let us remember that the institutional researcher usually is a staff person operating within the office of the president of the college. If this is the case, and it is my belief that it should be, then the institutional research officer carries with him the implicit commitment of the president that these undertakings are worthwhile, viable and possible of being implemented. A responsible researcher can serve as a link between the office of the president and the faculty within the context of his position and responsibilities.

4. If the commitment is real and if institutional researcher is a creative effective staff member who relates well to the faculty and students, the environment and the climate of the college can be changed from one where the college is processing students to one where the college is educating students; where the faculty are interested in their instructional modes and are creatively endeavoring to enhance those modes; where staff and administration are informed about the current data concerning the college; where the president has the data and reports to support his endeavors and where the president has the courage to implement the educational goals stated in the community college catalog.

In this paper, I categorized two basic kinds of research for a community college. I identified in broad terms the kinds of data that are needed to support both kinds of research activities, and I have enumerated in a very general way several practical outputs as a result of a viable program of institutional research on a community college campus.

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BUILDING A COMMUNITY COLLEGE INFORMATION SYSTEM IN A RIPTIDE

Dr. Gary A. Rice*

Introduction

My personal belief is that the time is long overdue for the two-year colleges to create and maintain a documented and accurate data base and shift their decision making procedure from crisis-reactive to an anticipatory-planning mode. To that end I would first like to briefly cite some of the major crosscurrents buffeting the community college. In response to these forces a schematic of an integrated, computer-based MIS will be shown and major implementation problems noted. Third, a resource modeling capability will be highlighted including a simulation Accountability Matrix which relates expended resources to stated goals and objective. Finally, some comments about the impact on colleges of suddenly knowing their operation will be made.

Before beginning, I should share with you three stages of my own ignorance which, I believe, anyone who has attempted the task of cataloging and systematizing information has probably experienced. Stage one was ignorant innocence when I possessed the notion that there were some secrets of human nature, some laws and regularities, and some cause and effect relationships about a college's existence. Through study, reading and experience some day I would know such secrets and be able to apply the know-

The second stage emerged when, on the one hand, the college staff looked at me as though I might know the secret or be closer to it than they were.

The third phase was that painful moment when people were still looking to you but you begin to think that maybe, just maybe, you don't know what you are talking about.

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BUILDING A COMMUNITY COLLEGE
INFORMATION SYSTEM IN A RIPTIDE
Dr. Gary A. Rice

This rare and revealing admission of doubts is presented to acknowledge that lacking omniscence is no reason for a college to sit idle and bemoan its fate or worse, to cop out by saying that "it can't be measured so they can't hold us accountable." The purpose of this presentation is to show that some aspects of post-secondary education can be measured and that sophisticated tools are available to assist colleges in making the most of very limited resources.

The community colleges are confronting a riptide of divergent groups forces and trends which clamor for decision-making recognition and power. Some of the major crosscurrents currently washing over the college include (1) increasing and often contradictory state board/legislative directives vs. maintaining local autonomy and setting goals and priorities, (2) the need for intelligent and accountable decision-making in the context of inadequate or even irrelevant information, (3) constantly changing reference points vs. the same reference points viewed differently, (4) collectively bargaining the increasing negotiation of the educational process, (5) budgetary constraints, (6) a need for change vs. natural resistance to any change, (7) increasing demands for accountability vs. no concensus of what "good" education is, (8) affirmative action constraints (9) non-coordination and geometric increases of reports frequently asking for non-available information yesterday by state and federal agencies, (10) political and community desire for administrative involvement in decision-making, (11) vocational and continuing education growth merging with the sacred academic liberal arts education, (12) the role of the community college as a future-oriented social change agent vs. the traditional storehouse of past knowledge, (13) obtaining decision-making information from diverse points of the college service area, (14) identification and tracking of the everchanging community college student, (15) defining a

"successful" educational experience given the diverse needs and nature of the student body, et.al.

This total Zeitgeist of rapid educational change and turmoil has produced an urgent need for colleges to become "accountable," to obtain the maximum amount of output for a given level of available resources, and demonstrate the degree to which priorities, goals and objectives have been met with expended resources. This state of affairs has dramatized the need for colleges to have or build a solid base of accurate, relevant, and timely information that people believe in and support; information that is apolitical and easily documented for authenticity. Additionally, colleges have found that with less money to spend and no money to waste, the impact of incorrect decisions is more immediate and far-reaching than during the sixties. Thus they are turning to the computer resource simulation models to aid them in forecasting the probable outcomes of a decision before hard dollars have to be laid out.

Figure 1

Management Information System

Figure 1 shows a computer-based management information system and data base composed of eight distinct, but interlocked, master file records Each file: Students, Courses, Facilities, Occupational Programs, Finance, Professional Staff, Classified Staff and Equipment, contains static information but user-defined variable information can be added or updated. Each file also has an extensive error edit routine and produces a series of operating reports that are descriptive in nature. These files are tied together with the various designated cross links. Also, visualize a third-dimensional vector coming from any and all file combinations. These combined file analytic outputs represent valuable management information

for decision making.

Several major problems are likely to be encountered during the construction process. First, it is necessary to define what input and output variables merit the cost of collection, storage and potential retrieval. Either including irrelevant variables or excluding relevant ones will break the system's closure. Second, each operational area within the college has developed a subsystem of its own with their own procedures, data definitions and output requirements. There were thus minimal integration of records between offices and no common language. Third, there are often no common definitions or units for observations within departments, divisions, or even between colleges. This situation makes it almost impossible to produce concensus since everyone is developing a position based upon his own unexplicated data definitions.

Figure 2

Cost Accounting Analysis System

Figure 1 represents a technological task of determining relevant elements and building appropriate computer files. But, as Sheehan notes, the real difficulty emerges when one has to ask some future-oriented questions and simulate the probable consequences. Figure 2 depicts a cost forecasting and resource modeling capability which is superimposed on the data base. These computer modules include the NCHEMS Induced Course Load Matrix, Faculty cost/workload routine, and the NCHEMS-RRPH 1.6 which arrays full and unit costs by department and student intent. Additionally three locally developed computer modules are interfaced with the NCHEMS products. These local programs actually have accuracy beyond the NCHEMS software. As shown, it is a closed system which presents a post hoc descriptive picture but it is possible to "unhook" from the data base and ask "What if" questions in a predictive simulation mode. Once the data have contributed to

a decision, they are inserted in the college data base and resimulated since the model itself has become part of the data base.

A number of thorny problems will arise during this phase of development. First, there is the natural fear by staff that the computer is replacing them as decision-makers and they feel ignorant about understanding the model. They need to be shown that a model is only a tool, not a decision maker. Since a model is only a symbolic approximation of the real situation if it fails to describe the world it should be changed, not the world. Second, since the model routines are logical it must be assumed that input and output processes and data are logical, rational, accurate and isomorphic with the institutional reality. One will probably find that this assumption is not initially valid. Third, the model assumes that the user knows all of the major elements and the input-output interrelationships functioning within a college. This usually has to be painstakingly dug out. Fourth, initial uses of simulation models usually produce statements about its capability to predict the future. A model doesn't purport to predict the future per se, but only explicitly indicates the nature of the processes by which the future evolves out of the past and present. Fifth, the college staff has to understand the limitations of simulation models, i.e., hypersensitivity to enrollment fluctuations, they are not budget models, they do not deal effectively with inflation or marginal costs, the system is exclusively expenditures at this point, it focuses primarily only upon those quantifiable elements of instruction. It is only a process system so they need to be cautioned not to seize some unitary, simplistic productivity index, et al. Finally, the administrators, board and faculty had to break out of "quill pen" concepts of manipulating information and learn how to ask the right kinds of questions in the right way.

Figure 3

Curriculum Accountability Matrix

A simulation to array resources toward goals and objectives currently being seriously studied is presented in Figure 3. The three-by-four-by-four matrix encompasses the stated curricular goals and objectives of the college. Although the cells are mutually exclusive, it is possible for different sections of a given course to exist simultaneously in several cells. Each cell would be defined in measurable goals and priority weighted. Needed activities and their historical costs would be determined and dollars allotted to the cell. Some cells would make zero contribution. Once established, college resources would be located at and funded out of the dollars in each cell. As a decision is made to increase a cell allotment, another cell will have to be decreased and the simulation capability dramatically emphasizes this fact. With this capability, the issue will not be about how dollars were expended, but rather, negotiations about how the goals and objectives should be defined and prioritized. Also relating subsequent student follow-ups back to the matrix enables the college to determine expenditure level vs. level of success. Student intent can be arrayed across the matrix via ICLM (Induced Course Load Matrix) to compare student needs with college perceptions of those needs. Later the matrix could be employed in like manner for instructional support areas such as physical plant, student services, administration, library, et al. and included with the instruction matrix for a complete picture. There are other ramifications being currently explored within this structure.

This highlighted presentation does not do justice to the myriad problems which must be overcome in creating a complete information system. There is an initial tendency to give a larger weight to available data and focus little attention on the suitability of such measures. Additionally, as many

writers point out, education is basically an intermediate good produced not so much for its intrinsic value as its input to other aspects to society. Since the demand is derived the definition and valuation of any "standard unit" of accountability depends largely on what is happening outside of the college. Also any information is relative, apolitical and meaningless by itself until individuals give it a context, political dimensions and meaning. Attempting to anticipate the everchanging vagaries of people and their information needs while building an institutional information structure is a prodigious feat. In addition, there is an initial tendency to either expect that simulations can reveal all decisions or else picayune simulations are carried out ad infinitum in an effort to avoid making a decision. Both extremes represent a misuse of the tools and users needed to be so instructed. Finally, it should be noted that community colleges have often grown up around processes not functions,i.e., payroll clerk, registrar. We then try to mechanize a process system and ignore the people. It becomes a challenge to develop an integrated functional system yet take into account the existing organizational structures.

In spite of the negative tone my comments may have conveyed, I wish to end on a very optimistic note. The impact of comprehensive knowledge about an institution's existence and operation is hard to measure, but some exciting things are in evidence. Besides producing an integrated framework for the institution's record-keeping, the renovation process results in a clearer picture of the interdependence of the college components. Also the acquisition, allocation and utilization of resources has been facilitated. Third, any institution that lacks adequate information tends to operate in an atmosphere of suspicion and silence leading to atrophy. Creating an information system that is open and documentable has encouraged people to communicate and, in many instances, has negated

acrimonious debate because the proper alternative is almost self evident. Even if it isn't, at least both parties must prepare their arguments from the same reference point. Fourth, a significant by-product has been the preparation of a "fact book" organized into the eight MIS categories. With the format constant from year to year, the trends soon become evident. Also at the point of accreditation the college will have a wealth of documented back-up information at their fingertips, not to mention its interim use in preparing grant proposals or speaking with legislators. Finally, the college staff is becoming more comfortable with the notion that they can dare to think and try new ideas using the simulation tools to evaluate, plan and control the college destiny in ways never before possible.

FIGURE 1

MANAGEMENT INFORMATION SYSTEM

Y.V.C. (Proposed)

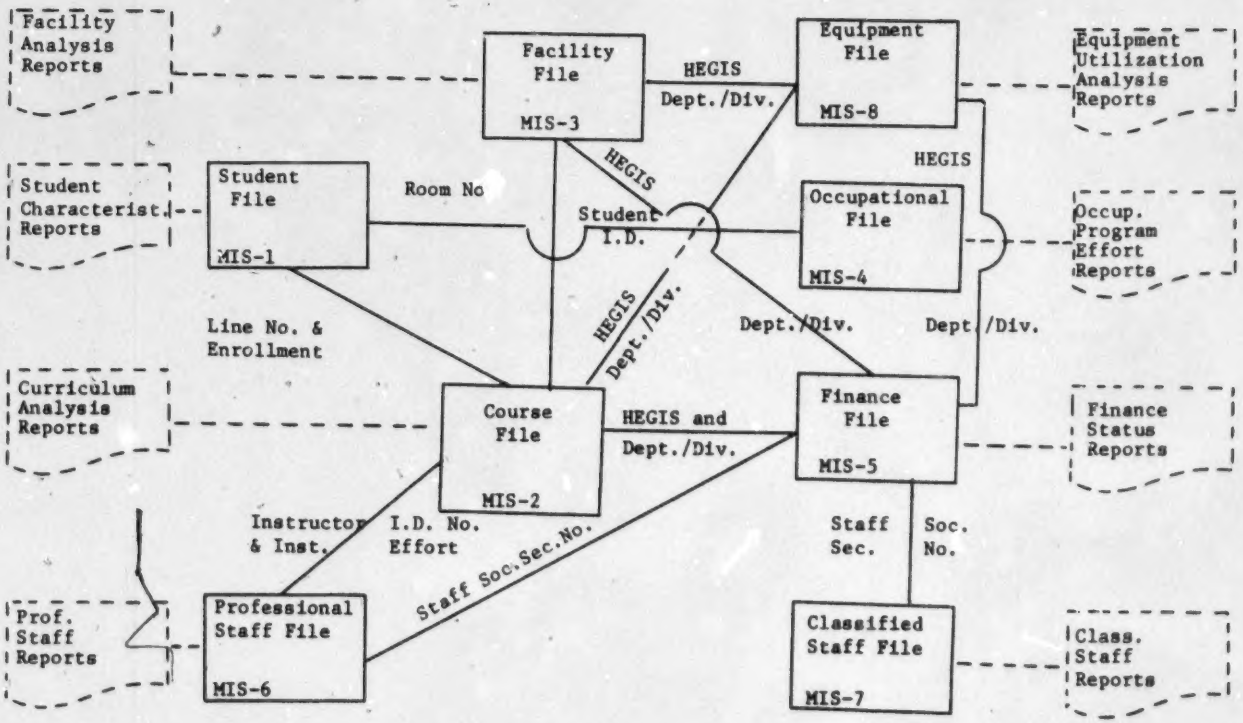


FIGURE 2

COST ACCOUNTING ANALYSIS SYSTEM
Y.V.C. (Proposed)
Historical Data Base

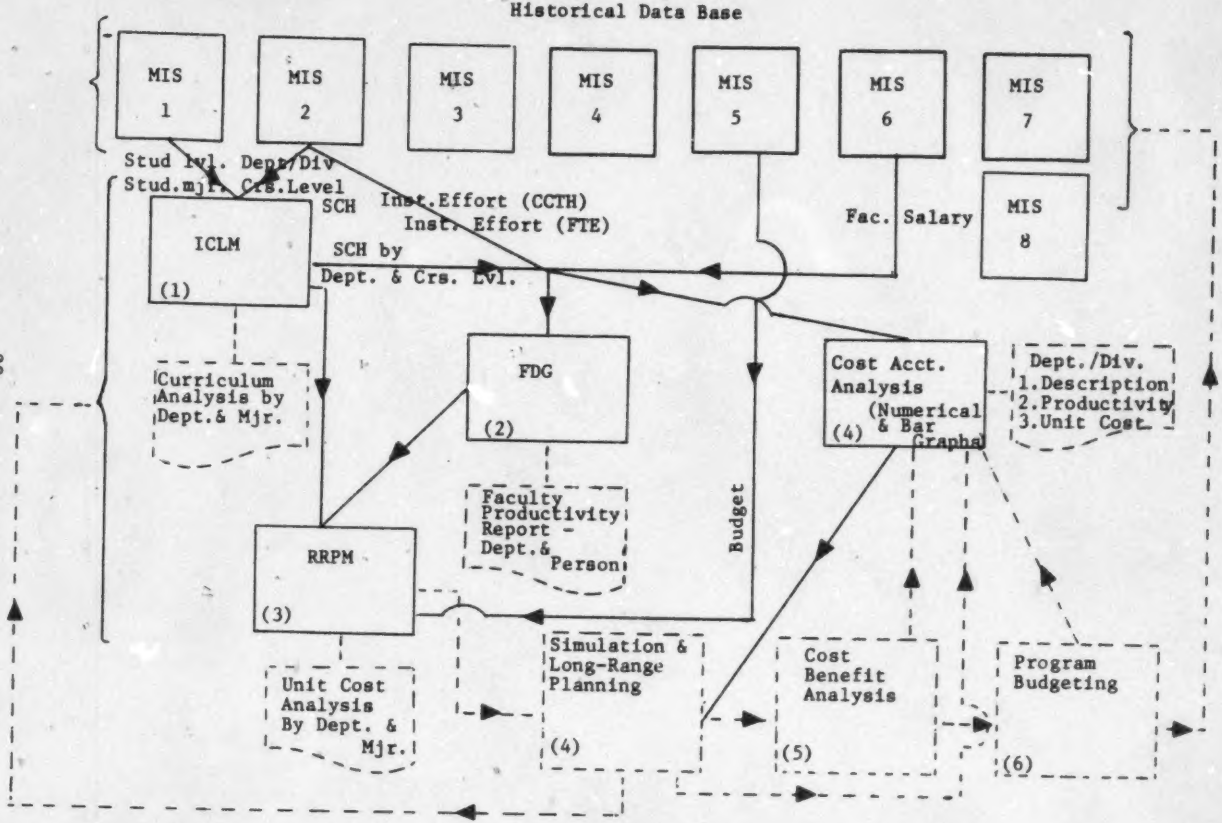
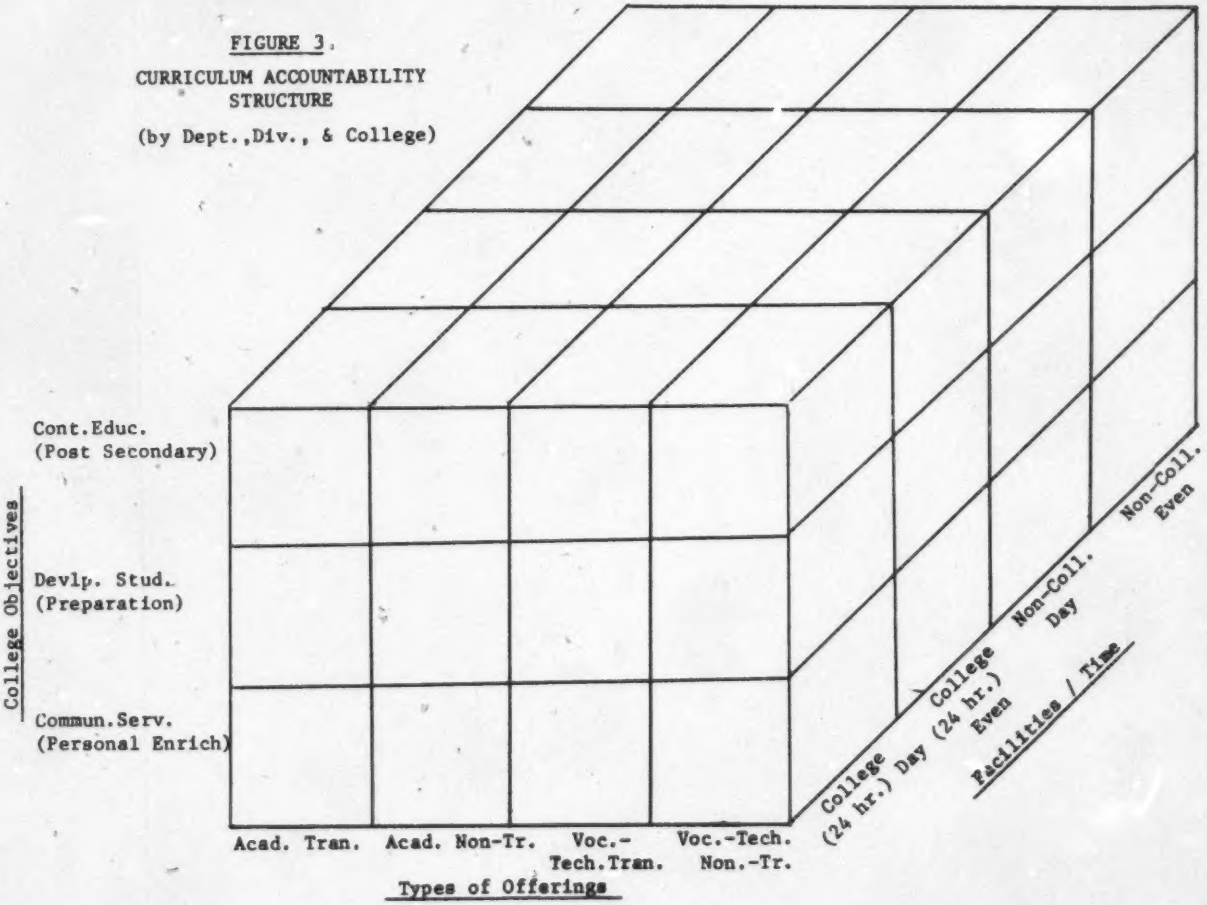


FIGURE 3.

CURRICULUM ACCOUNTABILITY STRUCTURE

(by Dept.,Div., & College)



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OPTIMISM AND COMMUNITY COLLEGE IR

Mr. William D. Cohen

Development of Institutional Research (IR) in higher education progressed rather slowly and has only recently produced a science of institutional study. Prior to 1955, only ten colleges or universities had offices of IR, and as late as 1968, only 230 benefited from this practice. Roney (1970) reported that community-junior colleges credited no offices of IR with existence prior to 1960, and Park (1972) stated that between 1959 and 1968, less than one-fourth of all community colleges undertook any coordinated research.

Increased responsibilities within higher education and the community partially explain the emergence of IR in community colleges. Of necessity, however, much support emanates from internal sources, administrative offices at specific colleges. Without commitment by these individuals to utilize IR findings, such activity ceases to have relevance.

Confirmation of the imperative for IR as a specialized community college function reflects increased political, social and educational awareness of expanding roles for two year colleges. These roles include more extensive service to non-traditional students and diagnosis of skills most in demand by communities. Successful transformation from roles to specific goals, and attainment of goals, necessitates a sound flexible information base to facilitate rational administrative decision-making. Offices of IR meet these needs for they "benefit, assist, and advance research which leads to improvement in the understanding, planning, and operation of institutions of higher learning" (Morishima and Saupe, unpublished).

As most higher educational institutions utilize IR technology, it becomes necessary to delineate those elements of the "practice" of IR most applicable to community colleges. The following four questions suggest

a framework to accomplish this process: a) What factors cause a need for IR? b) What are and should be the objectives of community college IR? c) What does or should constitute the subject matter of community college IR? and, d) What is the appropriate organization of community college offices of IR?

Factors Causing Need for Institutional Research

Within community colleges the metamorphosis of IR from an applied novelty to a highly specialized profession continues at a pace paralleling evolutionary development of these institutions. Currently, community colleges change shape in kaleidoscopic fashion by redirecting emphasis of existing programs, adding new programs, and constant experimentation with new instructional technologies -- all in attempts to meet societal, governmental, and educational needs and expectations.

Capability to maintain such an orientation results not so much from "acquired characteristics" of institutions existing prior to two-year colleges, but from evolutionary development, from small, relatively simple organizations to those larger and more complex. Complexity includes division of labor to enhance realization of specific educational objectives, and power-communication responsibilities to review and evaluate the institution's performance (Etzioni, 1964). Concurrent and congruent with increased institutional complexity has been the evolution of a new administrative style, reduction of "seat of the pants" operations in favor of reliance on objective knowledge and a systematically collected data base for decision-making. The single most important factor concerning perceived need for IR is the degree to which an institution commits itself to scientific, knowledge-based administration; in other words, IR manages the production of knowledge (Doi, 1964).

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Significant factors dictating need for IR surfaced as a result of increased communication within specific community colleges, broadened inter-institutional interface, and expanded governmental (local, regional, federal) interest in community colleges. Increased formulation of public policy involving two-year institutions and the era of "accountability" also led to the need for IR.

Increased institutional complexity focuses attention on the need for precise communication between administration and instructional departments. Simpler, informal relationships characteristic of past internal campus operations give way to less satisfying but more effective, centralized and/or formalize interactions. Scrutiny of traditional educational activities becomes necessary as responsibilities are identified and results (outputs) measured. IR provides technology for analysis of such interaction. Of equal importance, more extensive community college involvement in academic planning encourages contributions by IR. When planning with instructional programs in mind (e.g., transfer education, professional retraining, and learning for leisure), burdens may be reduced by the availability of information regarding the marketplace for graduates.

Institutional research lives largely in the future, using what can be utilized from the past and the present (Carrothers, 1973). Personnel constitute the most readily available "clay" to be reshaped. Individuals "trained" in the past and working in the present often encounter difficulty adjusting to scientific management practices, and planning emphasis demands sound management development programs, especially for academic administrators. These "executives" must possess not only the requisite cognitive skills to solve institutional problems, but they also require facts about their schools in order to demonstrate competency - hence the need for IR.

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Increasing community college complexity, e.g., formalization and planning, may cause a state of "continuous disruption" to exist within the institution. In light of typical communications/information blockages or misdirections inherent in large diverse public two-year colleges, IR may assume a relatively new role as mediator and coordinator of institutional interaction. Such a position might extend beyond single institutions to encompass, through mutuality of interest, establishment and maintenance of a local, regional, or national information sharing "hot line" to link offices of IR and make available "experiences" and innovative problem solving techniques.

Community collges, as the mandated source of universally available education, and thus further diversity through service to an expanding population, perhaps need greater predictive capability than do other institutions of higher education. They must balance budgets and plan rationally for funding through various avenues of support. Two-year institutions must be able to demonstrate accountability to city, state and federal governments. Neither institutions nor governments can afford to be taken by surprise; IR reduces the likelihood of such occurrences.

Essential to effective institutional planning, particularly at the community college, is ability to participate in the development of, and be able to predict, potentially influential public policy. Consequently, IR must exhibit sufficient flexibility to enlarge upon its more traditional survey and statistical research techniques. Here, institutional needs dictate that institutional researchers range far enough afield to: "follow carefully the literature of higher education to perceive which ideas seem to develop a following; follow annual reports of large foundations; follow public policy decisions in states tending to be in the forefront of educational change; follow public statements of government officials, and court decisions affecting higher education" (Kibbee, 1973).

Through such an analysis, IR evolves from a simple fact-finding service to an intelligence-information system. Seen in this light, IR reinforces those who are responsible for planning interface within and between institutions; institutional-governmental relations; and institutional-governmental-public interaction. IR buttresses credibility of and confidence in community college decision-making.

Factors external to offices of IR provide impetus for initiation of various studies and evaluations. However, incumbent upon offices of IR is formulation of goals and objectives to further develop their potential to serve the institutions in situations not yet demanding overt attention - in essence a policy of strength in reserve. Supplementary to the above, Suslow (1971) suggests that offices of IR endeavor to mediate between technological practices and methodologies and the educator-administrators. By providing a communication link, institutional research can help prevent mis-management which may result from over-zealous attempts to formalize and quantify educational processes.

Objectives of Community College IR

In many instances, organization, introduction, maintenance and improvement of community college educational programs approximate the complexity of large business enterprises and similarly may no longer be run, on improvisation guided by expediency, opportunism and competition (Dressel, 1971). Administrators concerned with overall funding and subsequent internal allocations seek varying degrees of guidance to obtain sound institutional operation. In this regard, IR strives to provide direction through information inputs, and yet function in a semi-independent capacity -- somewhat removed from administrative outputs. Suslow (1971) attributes this position to IR's need to maintain credibility and objectivity. A fine balance must exist such that isolation, irrelevance, and

failure to support institutional goals do not occur.

Successful IR function depends upon the ability to secure total institutional support for research activities. As Morishima and Saupe (unpublished) proposed, "institutional research is a broad field cutting across diverse disciplines such as business, psychology, education, and architecture." The above concept is crucial to research within campus communities. Consequently, IR endeavors to build support by integrating campus-wide involvement into search for possible areas of research study. Of particular utility in this regard are faculty advising committees. Not only might they suggest new, imaginative topics and methods for study, but, in addition, faculty participation might inspire or require institutional researchers to evaluate the effectiveness of their own office -- in the spirit of accountability.

Institutional researchers strive through accuracy and timeliness of information, to make a substantial, positive impact on their colleges, and perhaps a contribution to community college education as a whole. According to Montgomery (1970), achievement of these goals is contingent upon production of fewer, improved studies, those where conclusions evolve from systematic, ongoing follow-ups. In this manner, institutional researchers facilitate acceptance of results and stimulate action, and thus change. Institutional researchers must persevere, for as F. M. Conford (1923) suggested, "Nothing is ever done until everyone is convinced that it ought to be done, and has been convinced for so long that it is now time to do something else."

Unconditional acceptance of evolutionary educational change does not suit offices of IR, for they must remain "ahead of the game." For them, proactive formulation of change, as an "offensive" policy provides the best defense against "lethal" institutional obsolescence. Though indi-

vidual two-year colleges may recognize the import of systematic IR, a national awareness must be extended to all community colleges, simultaneously rather than sequentially.

Several authors (Dressel, 1971; Kibbee, 1973; Saupe, 1970) address this need, implicitly or explicity, yet few potential solutions result. Neither is the issue new, nor is the problem resolved. Perhaps institutional researchers need to respond to the challenge and recognize the following primary objective. Community college institutional researchers must sponsor formation of a national community college information system. Such an "office" might, in reality, consist of a regional network of offices maintaining files of "inactive" research as well as monitoring on-going or systematic projects. Offices would provide a repository for community college information, much like the ERIC Clearinghouse, yet by means of newsletters and consultation, selectively disseminate concept and process oriented data. Such information would include "a taxonomy of data and a catalogue of methodology...would effectively reveal duplications of efforts, instances where communication is lacking, voids in types of data that can or should be collected and conflicting definitions" (Saupe, 1970). In addition, these offices would help to reduce time spent in research design, reduce the practice of "bad" research, and initiate follow-up on research results. If community colleges joined together in harmonious IR, dividends would be reaped in enhanced intra/inter-institutional cooperation, more rationalized decision-making, and maximized coordinative capability of offices of IR. In essence, a national system, as outlined, would allow research by objectives (RBO) to replace extemporaneous research activity.

Present community college needs and future projections suggest broad objectives for IR based on "the national system." Offices of IR may reduce material outputs and devote extensive effort to training a core of experts to travel the "national circuit," within and apart from educational

institutions. These individuals will help coordinate newly established community college offices of IR and provide guidance to researchers in need. They may also circulate in industries of particular importance to community colleges.

Institutional researchers will, or should, seek to generate greater public and academic understanding and appreciation of their work. The virtues of long-term planning for accurate decision-making will be extolled - to reduce pressure for short-term decisions. Within two-year institutions, administrators, faculty and students will be exposed to a broader conception of research within the community college educational enterprise.

Subject Matter of IR

"Generally, IR concerns fall into two major areas: a) studies which focus upon existing, objective data, and b) studies concerned with measures of attitudes, curriculum development, and evaluation, etc." (Morishima and Saupe, unpublished). When dissected, these inclusive areas expose numerous specific topics and techniques for study. Community college offices of IR provide descriptive reports concerning the college's present status and the degree to which its goals are being met. Within this context, a look at future needs is appropriate. Institutional researchers then identify, isolate, and tender specific recommendations about institutional strengths and weaknesses.

High national unemployment figures and student concern for rate of return from education combined to shift IR emphasis away from student characteristics toward career education. This orientation makes research dealing with relation of learning to future employer expectations extremely important. Societal expectations, as observed in public policy, now focus on development of methods to satisfy increased egalitarianism in education,

hence, studies of instructional techniques for non-traditional students claim immediate relevance. In attempting to find ways to accommodate community college functions of teaching, research, and service to current educational needs, IR has become more sensitive to the demands of the community and government.

To expand community focus, institutional researchers attempt to ascertain, by survey and interview, solutions to problems faced by "special interest groups." Life styles and objectives of rural and urban dwellers are not highly congruent. Similarly, adolescents, senior citizens, and working mothers require diverse programs from community colleges. IR evaluates the relative importance of programs to communities and to institutions themselves (Mayhew, 1966; Park, 1972).

Institutional researchers increase the likelihood of definitive studies by devising and initiating systematic data collection programs on all phases of institutional operation. The on-going approach insures a constant flow of information. More extensive practice of this technique is a response to recognition of the growing demand for information rather than pure research studies. As Park (1972) contended, information, e.g., analysis of costs, behavioral objectives, or space usage, is needed in specific community colleges rather than in community colleges in general.

Gathering and controlling potentially useful information resources, and implementation of new policy on the basis of that information, are related, but separate processes. IR provides departments and administrators with a "quantifiable basis" for decision-making. Further, IR should evaluate middle management and administrations in an effort to determine by particular school and genre (community college), the most facilitative structures for organization, e.g., hierarchical vs. collegial, procedural vs. substantive due process, etc.

Systematic production of knowledge, and policy implementation, enable institutions to achieve self-fulfilling prophecies, yet the entire process exposes and proposes new areas of concern, and thus, new, often formidable questions to be answered. By scrutinizing community college physical operations and personnel interaction in their entirety, IR may ease tensions and bridge gaps that tend to expand when institutions, administrators, faculty, and students must accept new roles and contingencies according to the dictates of society.

Organization of Institutional Research Offices

Though numerous guidelines for the organization of offices of IR exist, several principles suggest a basic framework for discussion. IR must be "planned," and as such, responsibility for planning should be centralized in the director's role. The director should be part of the president's staff so that he/she may, as "dean of information," receive and contribute inputs on both long and short term planning. According to Roney (1970), directors come from a variety of backgrounds, most often from administration, education, and psychology, and do in fact report to the chief academic officer 46.3% of the time. The staff function of IR is to provide crucial assistance to line officers and policy makers in the the execution of their tasks. As staff organizations, officers of IR are developed to provide accurate information to control institutional quality, advise, counsel, and support the line (administration). As extensions of administration, IR offices (staff) possess no right to implement policy or command over the line. Staff power or authority is "functional," the force of knowledge or expertise. In addition, the external participation factor should be taken into consideration when organizing IR efforts. This entails planning to augment interpretive capabilities by inviting participation of data users, e.g., faculty advisory committees.

individual instructors, administrators and students, in problem-solving activities.

The extent to which offices of IR can afford full-time directors (50% in public institutions; Roney, 1970) with suitable backgrounds, and enjoy a wide range of operational freedom, depends upon adequate funding. A program of effective research for the community-junior college necessitates an estimated expenditure of 2-3% of the college budget, or a minimum of $10,000 - $35,000 (perhaps 50% more now [1976] due to inflation) for a small college on a yearly basis (Cottrell, 1969).

Conclusion

Institutional researchers practice a science whose skills were, until recently, not thought to be of particular relevance as "administrative tools." Hence, many community and 4-year college administrators had little or no familiarity with statistics and experimental design. Though this state of affairs no longer exists to as great an extent, scientific management programs have not yet caught up with all community college academic officers. As such, IR continues to enjoy a relatively exclusive monopoly on production and dissemination of institutional knowledge. In this regard, IR has created a state of dependence, and as a "lower participant" (staff in support of line officers), possesses a great deal of power.

One does not suggest impropriety due to an unchallengeable position. Rather, one suggests that institutional researchers guard against complacency. IR must not be satisfied with present levels of attainment. Researchers must extend their competencies in information technology and their familiarity with educational administrative practices and higher education in general. They must continue to maintain high levels of

professional ethics, no room exists for personal power plays through misuse of data.

In reiteration, Tyndall (1964) suggested that the role of IR in community college education is "akin to that of operations research in a large business enterprise. It submits plans for consideration by management, assists in the detailed development of plans for implementation and assists also in evaluation and control aspects of planning and implementation."

In all probability, little pressure to change this role will build in the future. Rather, as Richard R. Perry (1973), past president of the Association for Institutional Research, suggested, emphasis will be on improvement. IR will attempt to design better methodologies for accomplishing creative administration as well as the objectives of higher education. Through such participation, institutional researchers will directly and indirectly influence development of goals to improve the quality of life, within educational institutions and in society as a whole.

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